THE CLIMATE OF EASTERN TASMANIA INDICATED BY ITS LICHEN FLORA.

By Rev. F. R. M. Wilson, Kew, Victoria, Cor. Mem. Roy. Soc., Tasmania.

During a visit of five weeks to Tasmania, in February and March, 1891, while exploring for lichens in the neighbourhoods of Launceston, Mount Arthur, Ulverstone, Hobart, Mount Wellington, the Huon River, and St. Mary's Pass, I was struck with the general and unexpected poverty of the lichen flora, and, on looking about for the cause of this, I noted the evident frequency of bush fires, which are the most destructive enemies of lichen growth. This, however, did not wholly explain the matter, for, even where the plants might be expected to recover from the action of the fire, their vitality seemed to be checked by the dryness of the climate. This was a discovery surprising to a Victorian, who had been accustomed to consider the climate of Tasmania a humid one. An examination of meteorological authorities, however, showed that in the eastern portion of the island the rainfall is not only less than it is in the western, but less than it is in Victoria. In the west and the highlands of Tasmania 75in. of rain have been registered in one year, and the average of the whole island is said to be 35in.; but the annual rainfall at Hobart is only 21·52in.

These adverse influences of fire and drought doubtless react on one another, the fires thinning the forests and undergrowth, and thus lessening the rainfall, and the lack of rain exposing the country to the ravages of fire.

These influences, however, are considerably modified in the eastern part of Tasmania by the altitude of the mountains and by the ocean currents along the coast, both of which have a great effect upon the geographical distribution of lichens.

When I visited Tasmania I was anxious to test a theory which I entertained with regard to the distribution of lichens in Australia. This theory was that the warm current from the tropical Pacific Ocean, passing down the east coast of Australia, carries southward the spores of tropical lichens and the conditions favourable to their growth, until it is met by the cold south-west seas and winds which greet the traveller when doubling Wilson's Promontory from the east. Nautical observations have determined the trend of this coastal current, and traced it from the tropics southward beyond Australia and along the eastern coast of Tasmania.

Nylander tells us (Syn. Meth., p. 69) that the tropical zone is specially characterised by its epiphyllous lichens, notably by the genus *Strigula*, and, among corticole lichens, by the numerous species of *Thelotrema*, *Graphis*, *Chiodecton*, *Glyphis*, *Trypethelium*, and *Porina*.

These genera, which are allied to the *Ascomycetes* among the Fungi, are largely represented in Queensland, on the eastern or seaward side of the coastal ranges. All of them, except the *Porinæ*, appear along the coast of New South Wales, but are less numerous there, both specifically and individually. In Victoria neither *Strigulæ* nor *Porinæ* have been found unless in a very undeveloped state; and the other genera have far fewer representatives than in the more northern colonies. They are most frequent in the eastern part of Victoria. I discovered many species of *Graphis* and *Thelotrema* and several *Chiodecta* on the seaward slope of the dividing range to the east of Melbourne, and especially on the Gippsland coast, and one *Glyphis* and one *Trypethelium* at the Lakes Entrance in Gippsland.

It remained to be seen whether or not my theory would be supported by lichenological explorations in Eastern and North-eastern Tasmania. I had opportunity to test it on Mt. Arthur and in St. Mary's Pass. And I found some of the same *Graphides* and *Chiodecta* and even a *Trypethelium*, which I had collected near Sydney and at the Lakes Entrance in Victoria. Two or three species of *Chiodecta* I found, not only on Mt. Arthur, but even as far south as Mt. Wellington. The genus *Trypethelium* is especially tropical or sub-tropical. And the presence of one of this genus in St. Mary's Pass testifies to the geniality of the climate in Eastern Tasmania.

As in Victoria, so in the more southern colony, the warm current down the east coast of Australia brings southward conditions favourable to the growth of sub-tropical lichens.

These facts, I think, suggest to the medical faculty what, probably, their experience has already proved, that the climate of East Gippsland, and the eastern coast of Tasmania must be pre-eminently beneficial to invalids. Lichenological observations indicate that both of these places are favoured by a much milder winter, as well as a cooler summer, than the other parts of their respective colonies.